

Self assessment answers

$$f(x) = \begin{cases} \frac{2x+4}{x^2-4x+2} & , x \leq -1 \\ x & , -1 < x \leq 6 \\ x & , x \geq 10 \end{cases}$$

$x \leq -1$

$(-3, -2) (-7, -10)$

$m = \frac{-10+2}{-7+3} = \frac{-8}{-4} = 2$

$y - y_1 = m(x - x_1)$

$y + 2 = 2(x + 3)$

$y + 2 = 2x + 6$

$y = 2x + 4$

$x \geq 10$

$(10, 10) (14, 14)$

$m = \frac{14-10}{14-10} = \frac{4}{4} = 1$

$y - 10 = 1(x - 10)$

$y - 10 = x - 10$

$y = x$

$-1 < x \leq 6$

$(1, -1) (4, 2) (6, 14)$

① $-1 = a + b + c$

② $2 = 16a + 4b + c$

③ $14 = 36a + 6b + c$

① $-1 = a + b + c \quad (-1) \Rightarrow 1 = -a - b - c$

② $2 = 16a + 4b + c \Rightarrow 2 = 16a + 4b + c$

③ $3 = 15a + 3b$

$$\begin{aligned} \textcircled{2} \quad 2 &= 16a + 4b + c \quad (-1) \Rightarrow -2 = -16a - 4b - c \\ \textcircled{3} \quad 14 &= 36a + 6b + c \quad \Rightarrow 14 = 36a + 6b + c \\ \textcircled{5} \quad 12 &= 20a + 2b \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad (12 = 20a + 2b) \times (3) &\Rightarrow 36 = 60a + 6b \\ \textcircled{4} \quad (3 = 15a + 3b) \times (-2) &\Rightarrow -6 = -30a - 6b \\ \textcircled{6} \quad 30 &= 30a \end{aligned}$$

$$\begin{array}{r} \text{A} \\ \textcircled{6} \quad 30 = 30a \\ \hline 30 \quad 30 \\ \hline \boxed{a=1} \end{array}$$

$$\begin{array}{r} \text{B} \\ \textcircled{4} \quad 3 = 15a + 3b \\ 3 = 15(1) + 3b \\ 3 = 15 + 3b \\ -15 \quad -15 \\ \hline -12 = 3b \\ \hline 3 \quad 3 \\ \hline \boxed{b=-4} \end{array}$$

$$\begin{array}{r} \text{C} \\ \textcircled{1} \quad -1 = a + b + c \\ -1 = (1) + (-4) + c \\ -1 = -3 + c \\ +3 \quad +3 \\ \hline \boxed{c=2} \end{array}$$

$$\boxed{y = x^2 - 4x + 2}$$